

Integrating indicators to achieve more effective conservation

Ian Dutton
iduntton@tnc.org

EPA Workshop on Environmental Indicators
May 17- 20, 2004, Kansas City, MO.



Key Themes

- How does TNC use indicators?
 - * planning for tangible conservation outcomes
- How will they shape our future work?
 - * the new Ten Year Goal
- How they help us work more effectively with others?
 - * Conservation Measures Partnership (CMP)

Core of TNC's Measures approach

1. Assessing Status

“How is the biodiversity
we care about doing?”

2. Measuring Effectiveness

“Are our conservation
actions having their
intended impact?”

3. Peer - review Audits

“Is the application of
our measures
producing credible
results?”

“Are we using these
results to learn and
adapt?”



*Not everything that can be counted
counts, and not everything that counts
can be counted.*

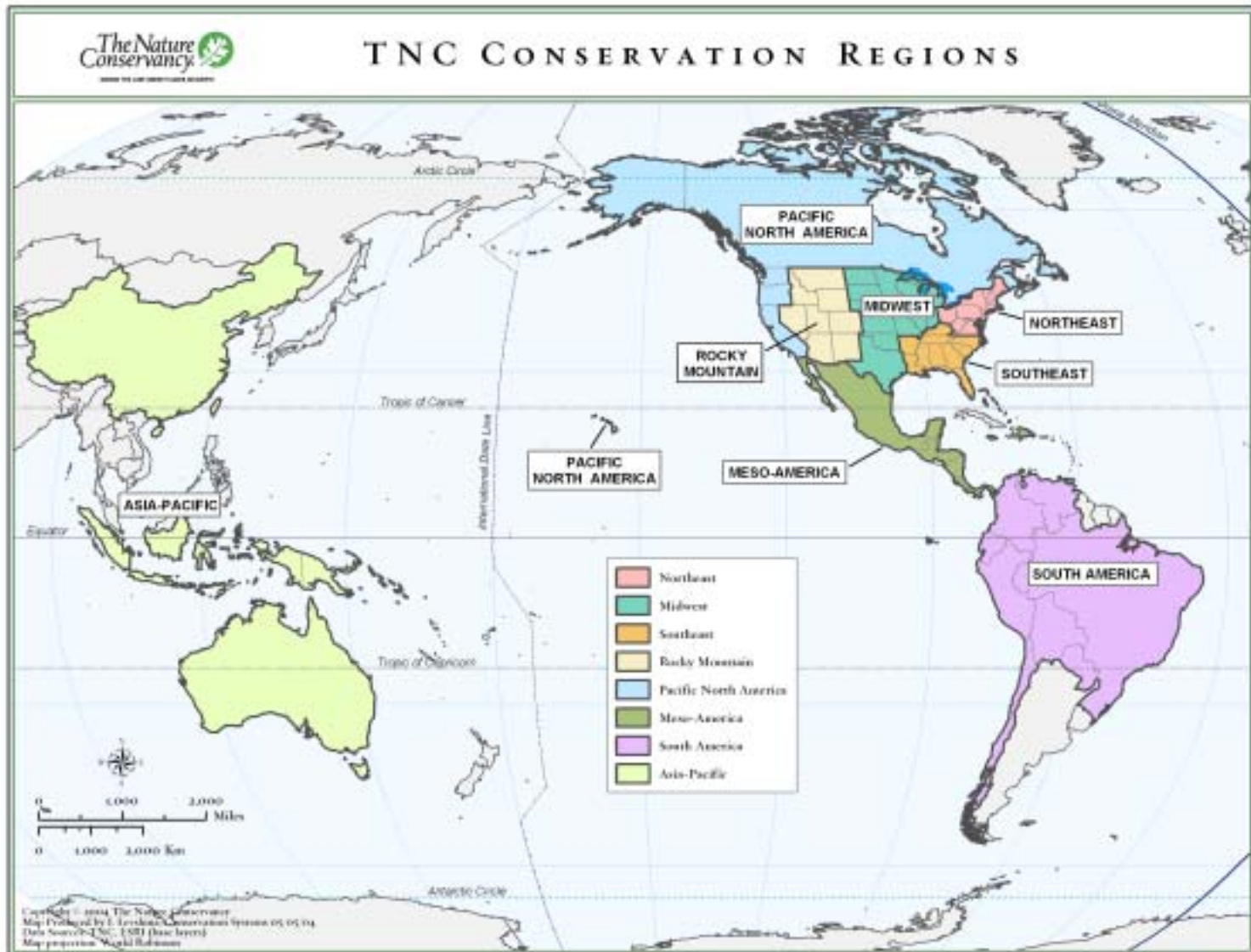
Albert Einstein



The Mission of the Nature Conservancy

is to conserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive

- **50-year history of conservation results**
- **global organization**
- **science-based**
- **partner-oriented**
- **consistent framework for mission success**



Conservation Approach (Conservation by Design)

Set Priorities

**Measure
Success**

**Develop
Strategies**

Take Action



Key Planning Frameworks

Set Priorities
Ecoregional Assessments

Develop
Strategies
5-S Framework

Measure
Success
5-S Framework

Take Action



Integrated Approach to Planning and Monitoring



Evolution of the 5-S Framework



Case Study:

Komodo National Park



Diverse

Resilient

Productive

Valued

Systems

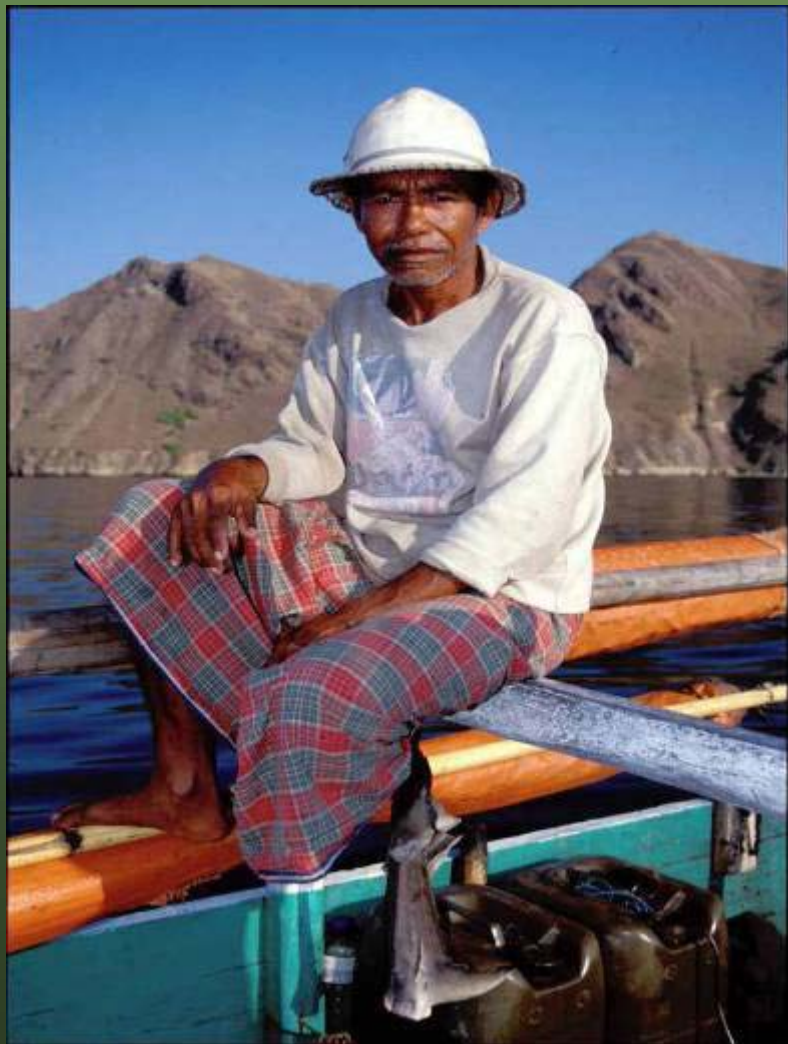


Sources

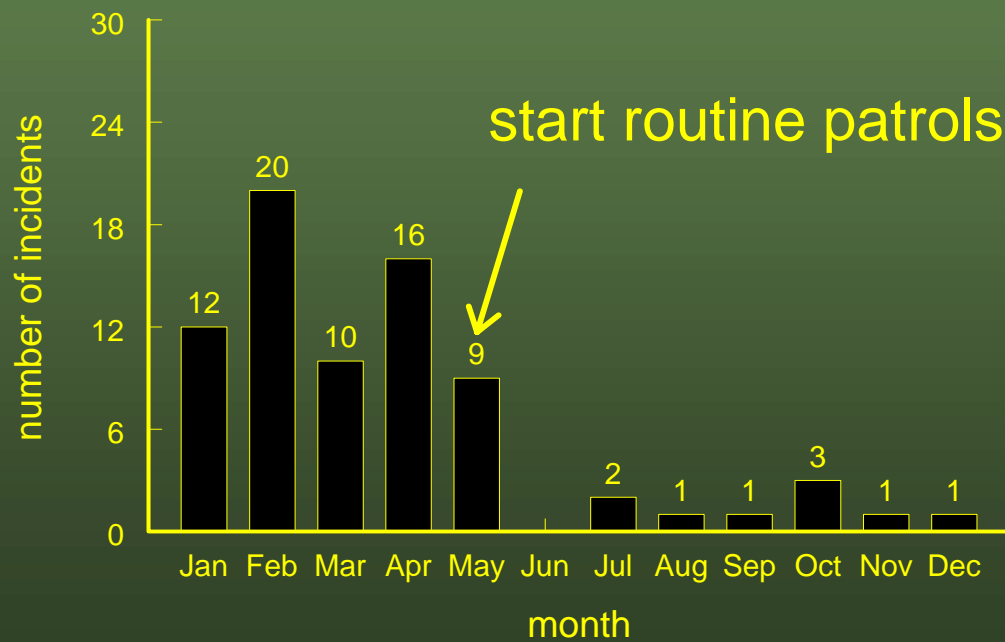


Stresses

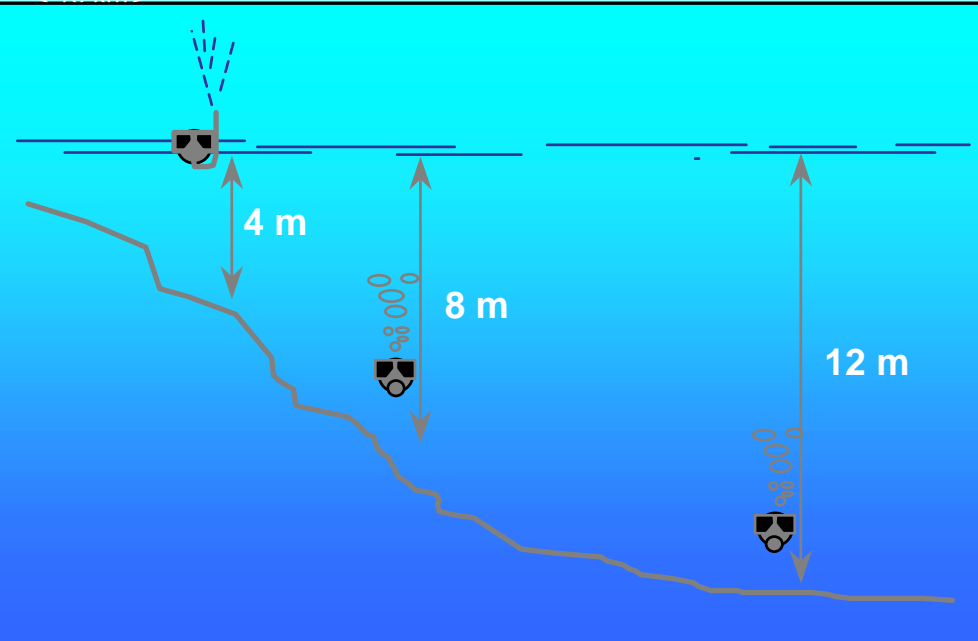
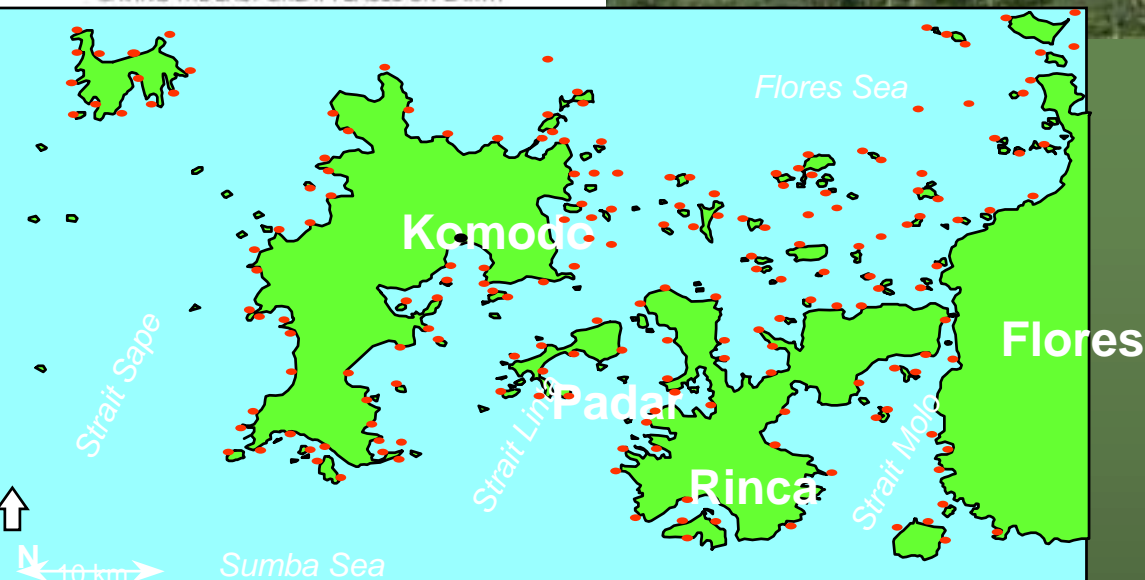
Strategies



blast fishing incidents 1996



Impact measures

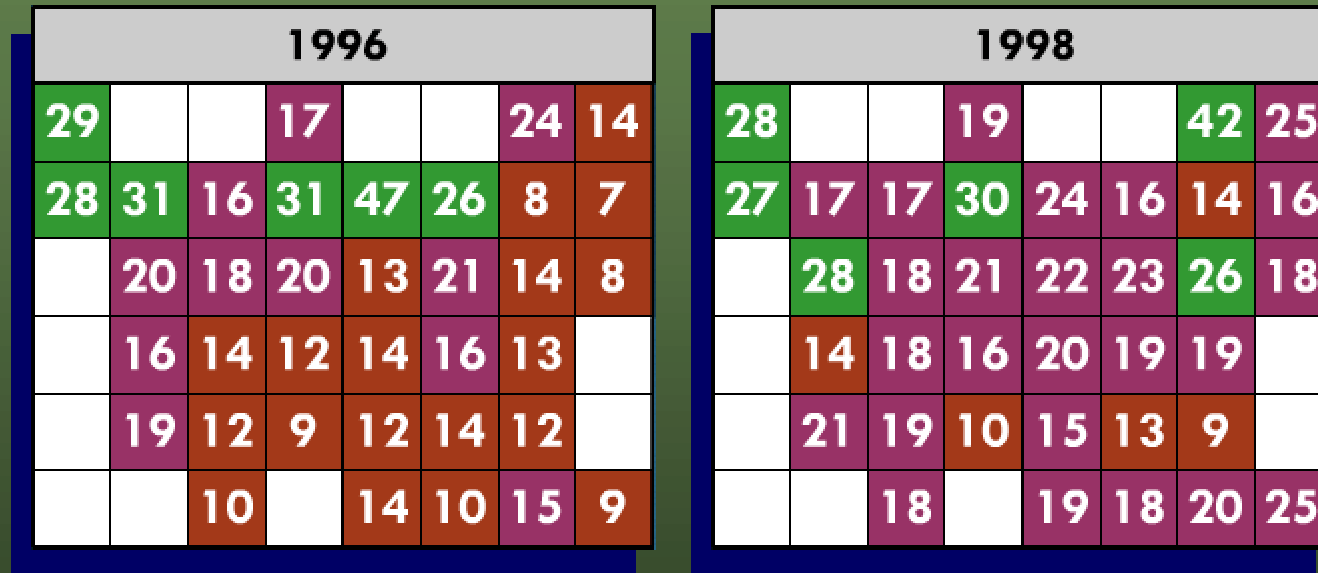





Extensive Coral/Fish Monitoring

- * 185 sites
- * 3 depths
- * 7-15% project budget

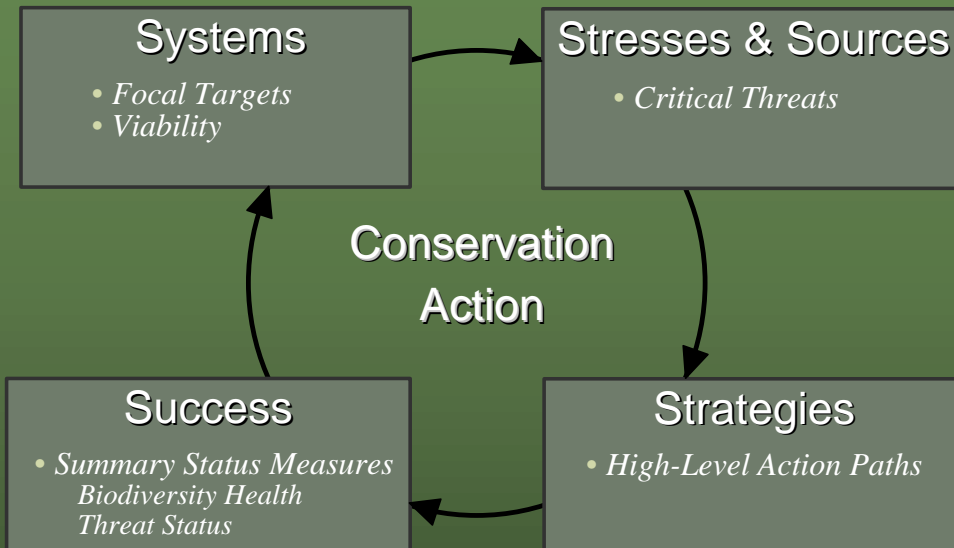
Success - increase in live coral cover 1996-98-00-02!

Live Hard Coral Coverage at Komodo National Park



-  less than 15% live hard coral cover
-  15% to 25% live hard coral cover
-  more than 25% live hard coral cover

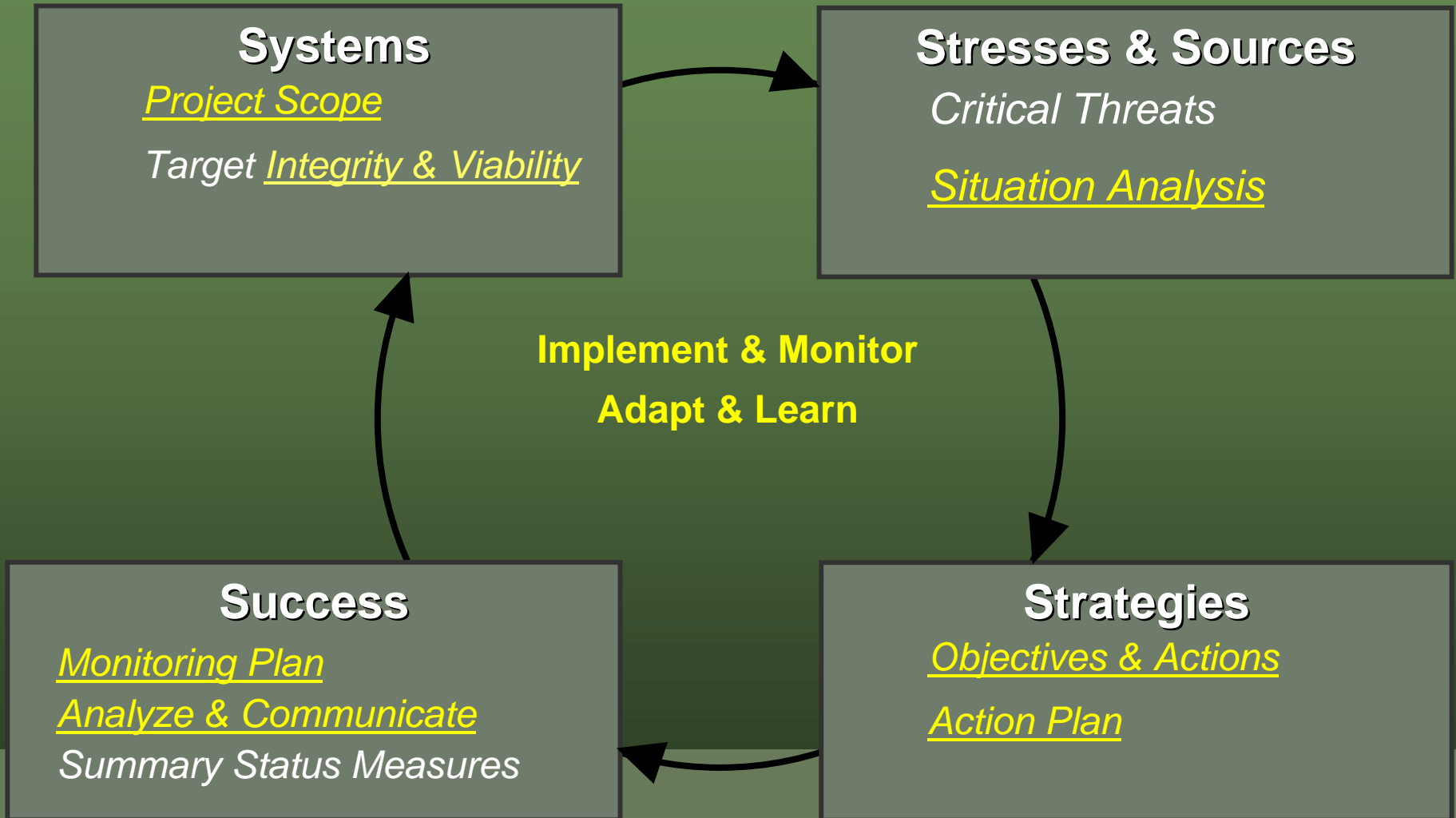
Enhancing the 5-S Framework



**Refocus on
adaptive
management**



The Enhanced 5-S Project Management Process



Framework for Ecological Integrity Assessment

Identify Key Ecological Attributes
for *Focal* Biodiversity



Identify Indicator(s) for Key Attributes



Rate Indicator Status

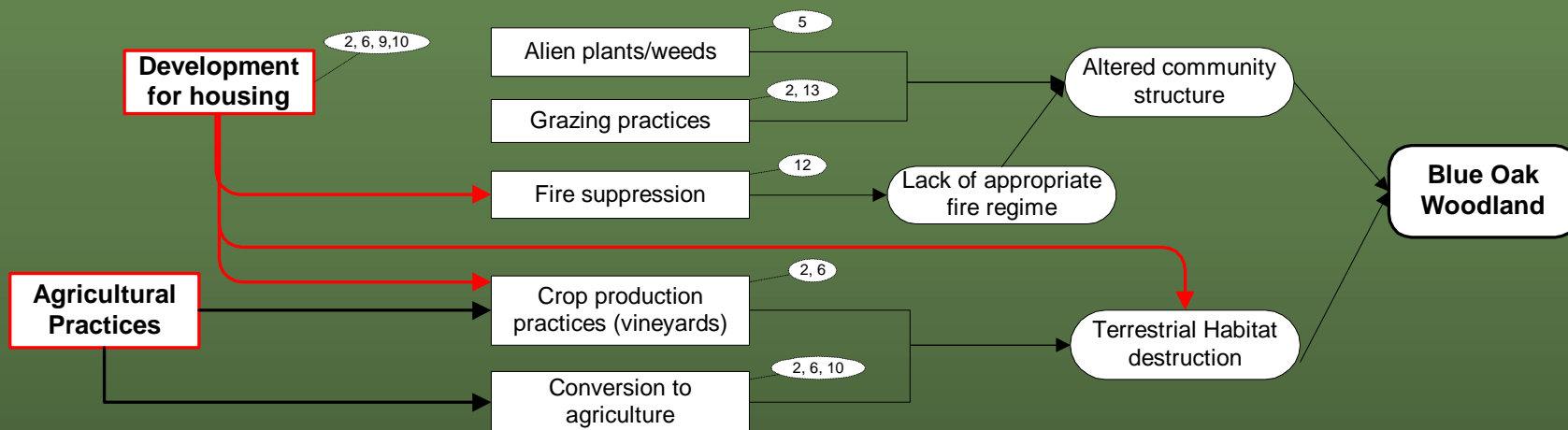


Integrate Indicator Ratings to Determine Status of:

- *Key Ecological Attributes*
- *Specific Elements of Biodiversity*
- *Integrity of Entire Protected Area of Landscape*

5S Situation Analysis

Blue Oak Woodland



Conservation Strategies

Strategies applicable to this system (partial list from all Cosumnes River strategies)

- 1 Implemented by TNC
- 1 Not implemented

- 2. Compatible economic development & agriculture
- 6. Easement acquisition
- 9. Influence land use planning to protect habitat and open space
- 10. Land acquisition (fee title)
- 12. Maintain proper fire regime (prescribed fire)
- 13. Maintain proper grazing regime

Key

Major Source of stress

Source of Stress

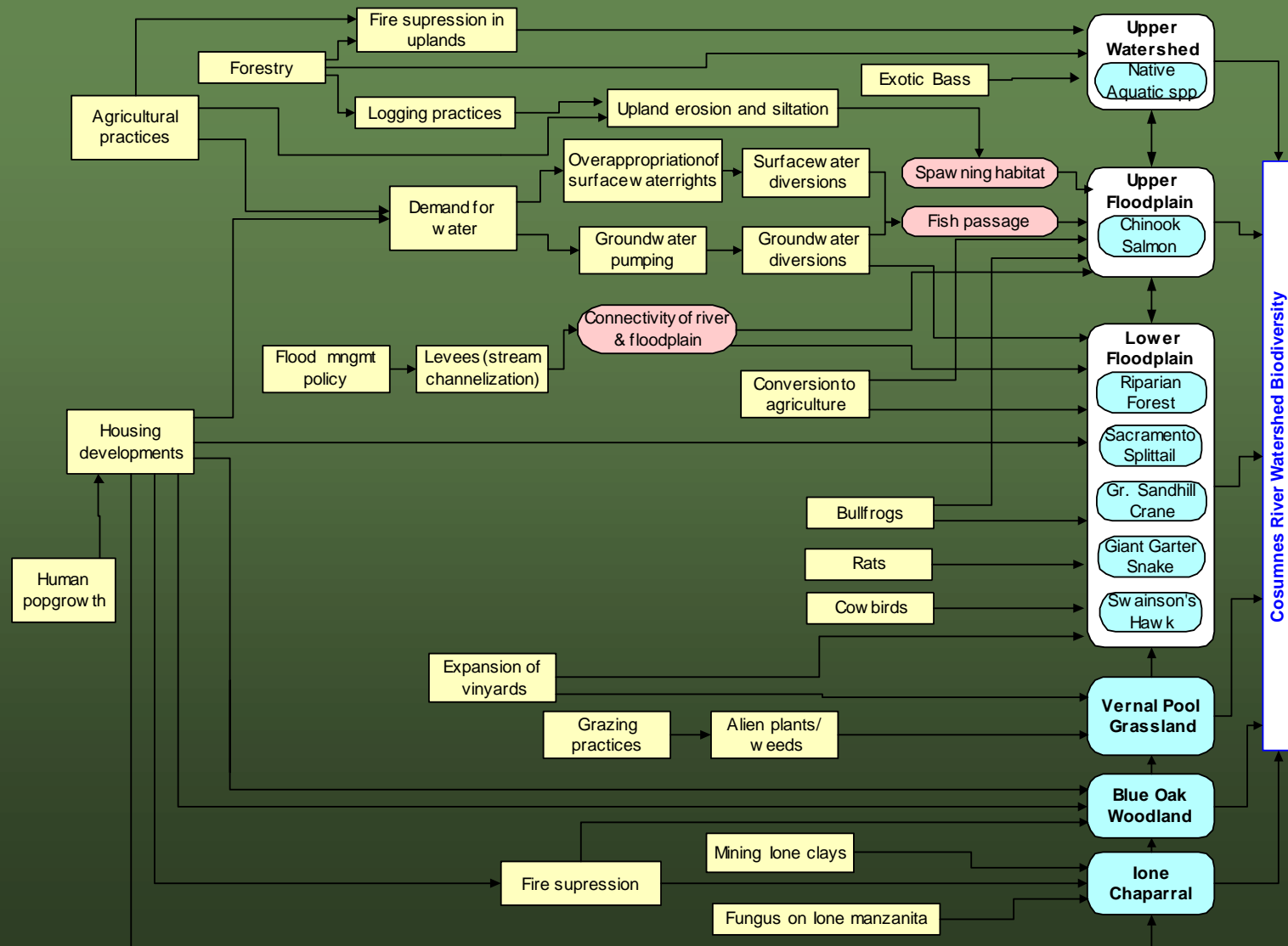
Stress

System

Monitoring Programs

No one is currently monitoring this system or threats in the area to our knowledge.

The Bigger Picture



1. Identify
Focal
Biodiversity

2. Identify
Key
Attributes

3. Identify
Indicator(s)

4. Rate
Indicator
Status

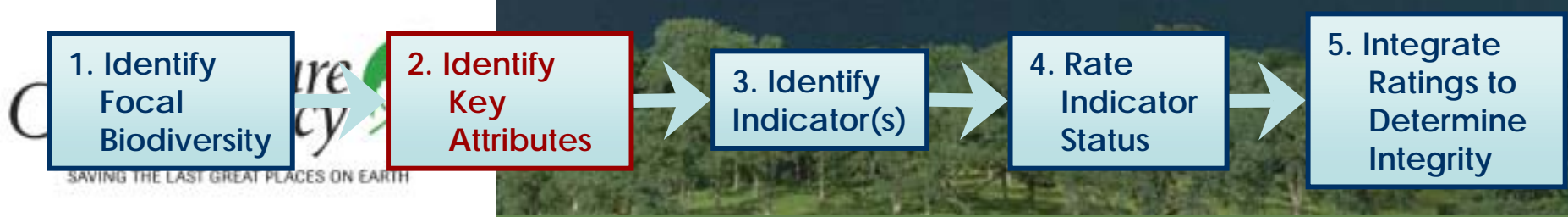
5. Integrate
Ratings to
Determine
Integrity

SAVING THE LAST GREAT PLACES ON EARTH

Select a limited number of
elements of biodiversity that:

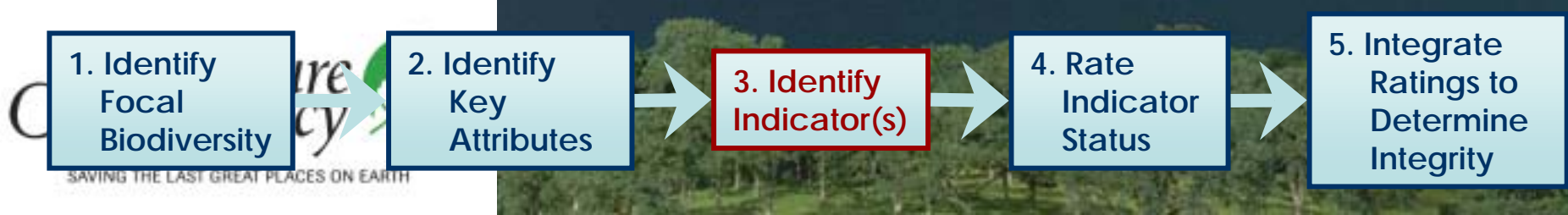
- Will be the *focus* of Conservation Planning and Action
- Will represent all biodiversity at the site
(including marine, aquatic, and terrestrial biodiversity)





Key Ecological Attributes

- ❑ Factors of target ecology that define or characterize the target, limit its distribution, or determine its variation over space and time
- ❑ Attributes of:
 - biological composition
 - spatial structure
 - biotic interactions
 - environmental regimes (both abiotic and biotic processes)
 - environmental and ecological connectivity
- ❑ Size, Condition, and Landscape Context



Indicators

- ❑ Measures used to assess status and trends of Key Ecological Attribute(s).
- ❑ Should be:
 - biologically relevant (reflect target health)
 - socially relevant (recognized by stakeholders)
 - sensitive to anthropogenic stress (reflect threats)
 - anticipatory (early warning)
 - relatively easy to measure
 - cost-effective (max. information/unit effort)

1. Identify Focal Biodiversity

2. Identify Key Attributes

3. Identify Indicator(s)

4. Rate Indicator Status

5. Integrate Ratings to Determine Integrity

Ecological Integrity Assessment Worksheet

Cosumnes River Reserve

Focal Biodiversity	Category	Key Ecological Attribute	Indicator	Indicator Ratings			
				Poor	Fair	Good	Very Good
Upper Floodplain: Chinook Salmon	Landscape Context	Migration: passage flows	Magnitude and Timing of Fall Flows	No connectivity between the Delta and spawning habitat	Periods of flow of 60cfs at Michigan Bar during migration season and at least 10 days of duration	Periods of flow between 60-200 cfs during migration season and at least 25 days of duration	Periods of flow > 200 cfs during migration season and >25 days of duration
Upper Floodplain: Chinook Salmon	Condition	Habitat structure (spawning)	Substrate Composition of Riffles	finer > 50 %	finer 10-50%; gravel and cobble 50-90%	Approx. 80% gravel and 20% cobble, some fine sediment	80% gravel, 20% cobble, no fines

Poor:
Restoration increasingly difficult; May result in extirpation

Fair:
Outside acceptable range of variation; Requires human intervention

Good:
Indicator w/in acceptable range of variation; Some intervention required for maintenance

Very Good:
Ecologically desirable status; Requires little intervention for maintenance

1. Identify Focal Biodiversity

2. Identify Key Attributes

3. Identify Indicator(s)

4. Rate Indicator Status

5. Integrate Ratings to Determine Integrity

Overall Target Viability and Project Biodiversity Health summary - Cosumnes River Reserve, CA

Conservation Targets		Landscape Context		Condition		Size		Viability Rank
		Grade	Weight	Grade	Weight	Grade	Weight	
1	Vernal pool grasslands	Good	+	Fair	+	Good	=	Good
2	Lower Floodplain	Poor	1	Poor	1	Poor	1	Poor
3	Upper Floodplain: Chinook Salmon	Fair	1	Fair	1	Fair	1	Fair
4	Upper Watershed	Poor	1	Fair	1	Fair	1	Fair
5	Ione Chaparral	Good	1	Good	1	Very Good	1	Good
6	Blue Oak Woodland	Poor	1	Good	1	Poor	1	Fair
7		-	1	-	1	-	1	-
8		-	1	-	1	-	1	-
Conservation Area Biodiversity Health Rank								Fair

Integrity measures are essential for adaptive management

Conservation Targets		Landscape Context		Condition		Size		Viability Rank
		Grade	Weight	Grade	Weight	Grade	Weight	
1	Vernal pool grasslands	Good	1	Fair	1	Good	1	Good
2	Lower Floodplain	Poor	1	Poor	1	Poor	1	Poor
3	Upper Floodplain: Chinook Salmon	Fair	1	Fair	1	Fair	1	Fair
4	Upper Watershed	Poor	1	Fair	1	Fair	1	Fair
5	Ione Chaparral	Good	1	Good	1	Very Good	1	Good
6	Blue Oak Woodland	Poor	1	Good	1	Poor	1	Fair
7		-	1	-	1	-	1	-
8		-	1	-	1	-	1	-
Conservation Area Biodiversity Health Rank								Fair

- Improves threats assessments
- Prioritizes conservation investments
- Defines what activities inside and outside conservation areas are important
- Informs monitoring programs
- Documents change and informs future investments

Limits of Current Practice

- Generally low priority for measures and little formal evaluation of progress against mission/goals
- No over-arching results framework – what is our impact globally?
- Lack of consistent data collection at site/project, ecoregion or organization levels diminishes ability to “roll up” results and integrate with results of other actors
- Lack of integrated conservation and financial performance data
- Quality assurance – how can we be sure of results?

Recent Evolution of Measures

FY '02-'03

1. Develop
and Test

Measures & Audit
Team:

- Develops & tests measures system & tools,
- Validates the needs for a measures program
- Develops institutionalization plan

FY '04

2. Refine

M&A Transition
Team/Conservation
Measures Group:

- Established CMG
- Pilots measures program widely,
- Refines program
- Prepares to take to scale

FY '05-06

3. Scale Up

Conservation
Measures Group :

- Leads wide-scale roll-out of the Measures Program
- **Every project measured**

CMG (Conservation Measures Group)

- **Ecoregional Status Assessment**

- **Project Effectiveness/Impact**

- **Conservation Audit**

- **Internal and External Coordination**



CMG Vision...

... to improve the practice of conservation by enabling TNC and our partners to collect, analyze, and use measures information to accomplish more effective and efficient conservation.



Major Activities to Date

- 36 project-level and 12 ecoregion-level measures pilots
- major upgrade of E-5S planning tool
- internal capacity building
- development of the ten year goal and organizational baselines to track progress
- formal definition of:
 - threats taxonomy
 - “effectively conserved”
- conservation audit/project reviews – China, East Kal, Greater Flint Hills (OK/KS), Pacific LRFT
- dialogue with key partners on metrics and protocols (e.g. GEF, USFS, IUCN, etc.)

Ten Year Goal (TYG)

By 2015, The Nature Conservancy will work **with others** to ensure the **effective conservation** of places that represent at least 10%* of every major habitat type on Earth

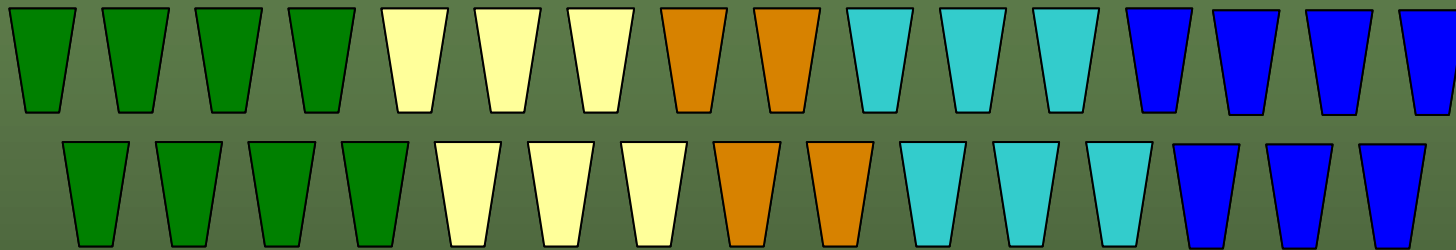
<u>MARINE</u>	<u>FRESHWATER</u>	<u>FORESTS</u>	<u>GRASSLANDS</u>	<u>DESERTS/ ARID LANDS</u>
<i>Status and threats</i>	<i>Status and threats</i>	<i>Status and threats</i>	<i>Status and threats</i>	<i>Status and threats</i>
<i>Conservation gaps and needs</i>	<i>Conservation gaps and needs</i>	<i>Conservation gaps and needs</i>	<i>Conservation gaps and needs</i>	<i>Conservation gaps and needs</i>
<i>Priority strategies and actions</i>	<i>Priority strategies and actions</i>	<i>Priority strategies and actions</i>	<i>Priority strategies and actions</i>	<i>Priority strategies and actions</i>
<i>Ecoregions where TNC will contribute</i>	<i>Ecoregions where TNC will contribute</i>	<i>Ecoregions where TNC will contribute</i>	<i>Ecoregions where TNC will contribute</i>	<i>Ecoregions where TNC will contribute</i>
<i>10yr outcomes for TNC programs</i>	<i>10yr outcomes for TNC programs</i>	<i>10yr outcomes for TNC programs</i>	<i>10yr outcomes for TNC programs</i>	<i>10yr outcomes for TNC programs</i>
<i>Measures & definition of conserved</i>	<i>Measures & definition of conserved</i>	<i>Measures & definition of conserved</i>	<i>Measures & definition of conserved</i>	<i>Measures & definition of conserved</i>
<i>Funds and capacity needed</i>	<i>Funds and capacity needed</i>	<i>Funds and capacity needed</i>	<i>Funds and capacity needed</i>	<i>Funds and capacity needed</i>

*% to be refined based on habitat goal-setting process

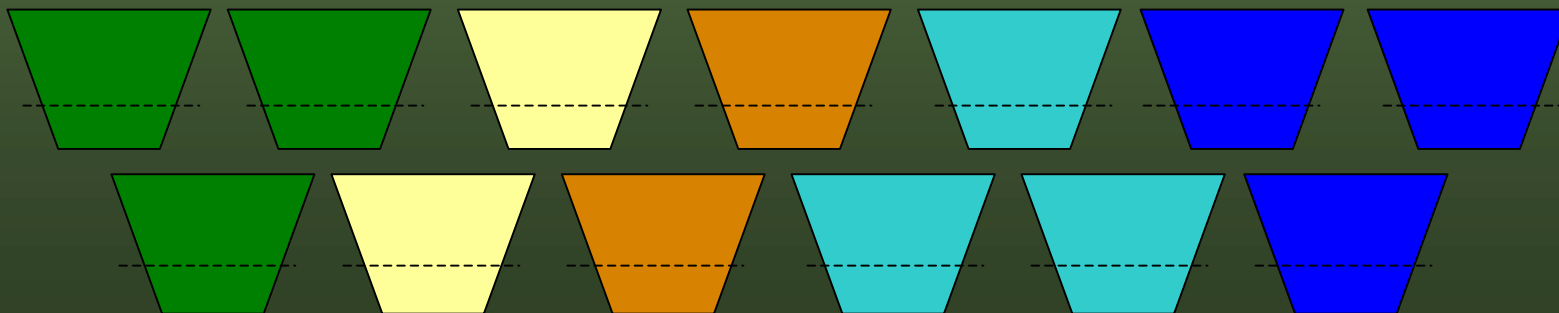
Aggregating measures



Projects



Ecoregional
portfolios



Major Habitat
Types
and
ten-year goals

Forests

Grasslands

Deserts

Freshwater

Marine



**“How can we do
conservation
better –
together?”**

Core Members:



Collaborating Members:



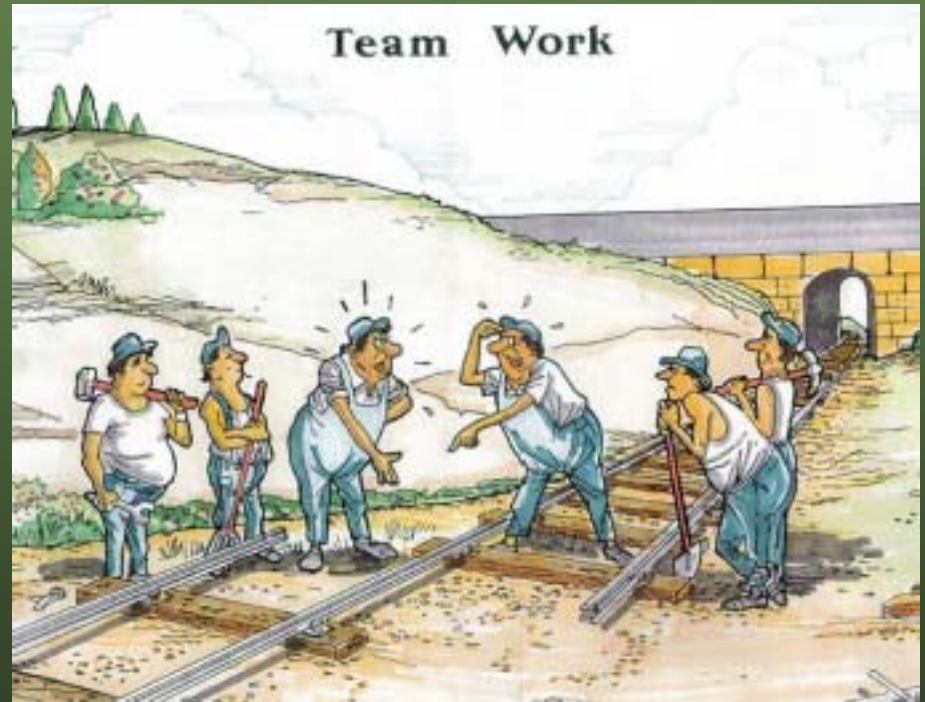
New Members:



+ Cambridge Conservation Forum

What is the issue?

- Competing systems
- Little collaboration
- Lack of knowledge – what works, what doesn't
- No consensus on framework on which to compare or build systems



Joint products

- Open Standards for Practice of Conservation
- Rosetta Stone
- Joint Project Audits
- Society for Cons Biology Meeting NYC – end July
- MacArthur Foundation Joint Pilot Project Grant(s)
- Strategic Indicator Selection Tool

TNC: www.nature.org

Measures: www.conserveonline.org

CMP: www.conservationmeasures.org

